di-GPS® Pro L
digital images GPS receiver
(Built-in data Logger)

User Guide

Ver 1.5

Please visit our website **www.di-gps.com** for the latest version of the user guide

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Contents

Introduction 3

Warning / Precaution for Use 4

Part Names 5

Mount di-GPS® Pro L to camera 6

Connect di-GPS® Pro L to camera 7

Connect di-GPS® Pro L to PC 9

Power Mode Switch 10

Status LED indicator for di-GPS® Pro L fix or not fix 11

Last Fix Repeat (“LFR”) 12

Remote Control Socket 13

Specifications 14

Warranty 15

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Introduction

Thank you for purchasing di-GPS® Pro L GPS Receiver. di-GPS® Pro L (digital images GPS) is specially designed for a DSLR (Digital Single-lens reflex) camera. It provides real time position (latitude, longitude, elevation) and the precise time (UTM time) information to your DSLR camera. It records the locations to each digital image file so that you will never forget the exact location where you took the pictures.

di-GPS® Pro L has a built-in 8MB internal flash memory data logger. It records up to 260,096 data points. di-GPS® Pro L reports the last fixed position when no GPS signal is available or the unit is out of GPS coverage.

di-GPS® Pro L allows you to save your present location data to your digital image file. Its State-Of-The-Art technology provides extremely fast TTFF (Time-To-First-Fix), unrivaled high sensitivity and superior performance in virtually any outdoor environment. di-GPS® Pro L can work in a place where GPS was not possible before: in the woods, under very heavy foliage, canyons, terrain obstructions, in cities with densely populated high-rise buildings and even inside a train or a car, with no external antenna required. It is designed to meet the rigorous demands of today's digital photographers.

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Warning / Precaution for Use

- Keep out of reach of children. This device contains small parts that may pose a choking hazard. Consult a physician immediately if a child swallows any part of this device.
- Under no circumstances should you attempt to disassemble the product and repair it yourself. Doing so may result in electric shock or product malfunction. Should the product break open as the result of a fall or other accident, send the unit to Dawn Technology Limited for inspection. For more information, please visit our web site at www.di-gps.com.
- Do not handle with wet hands or immerse in or expose to water or rain. Failure to observe this precaution could result in fire or electric shock.
- Do not use in the presence of flammable gas. Failure to observe this precaution could result in explosion or fire.
- Do not expose to flame or excessive heat.
- Do not expose to high temperatures
- Do not leave the device in a closed vehicle under the sun or in other areas subject to extremely high temperatures. Failure to observe this precaution could result in fire or in damage to the casing or internal parts.
- Turn off immediately in the event of malfunction. Should you notice smoke or an unusual smell coming from this device, remove the 10 pins connector immediately and send the unit to Dawn Technology Limited service for inspection. For more information, please visit our web site at www.di-gps.com.

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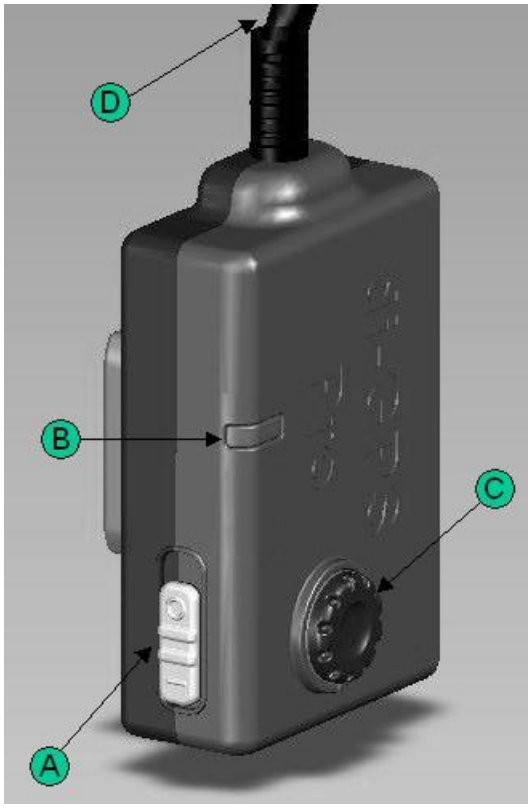
Part Names

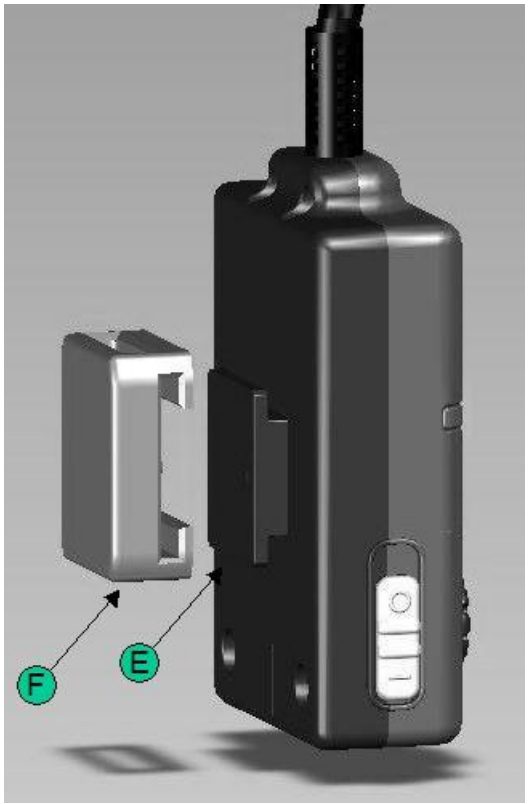


A – Power Mode Switch

B – Status LED

C – Remote Control Socket

D – DSLR Connection Cable



E – Flash Accessory Shoe Mount

F – Camera Strap Mount

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Mount *di-GPS® Pro L* to camera

di-GPS® Pro L provides two mounting methods. It can be mounted on the flash accessory shoe or attached to the camera strap with the camera strap mount.

Diagram 1 : di-GPS® Pro L was mounted on the flash accessory shoe

Diagram 2 : di-GPS® Pro L attached to the camera strap with strap mount accessory

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Connect *di-GPS® Pro L* to camera

Connect the DSLR camera and di-GPS® Pro L as described below.

1. Turn off the camera.
2. Remove the Cap from the 10 pin remote terminal on the camera body.
3. Store the Cap in a safe place.
4. Connect di-GPS® Pro L to the camera's 10 pin remote terminal with 10 pin connector. Do not use any extension cord. The 10 pin connector must be aligned with the mark on the camera body. Tighten the locking nut on the 10 pin connector.
5. Switch the power mode to "On" or "Auto".
6. Turn the camera on.
7. If di-GPS® Pro L is properly connected, the camera will display a blinking icon in the top control panel as the GPS receiver is searching for a signal. The icon will stop blinking once signal has been established and the receiver is ready to supply the current position.

di-GPS® Pro L will automatically detect the connection of the camera. It cannot be turned on when the camera is not connected whatever the power mode switch is set to "On" or "Auto". Both "On" and "Auto" mode is only function when the camera is properly connected.

Each satellite broadcasts a digital message that contains two types of information. One type is ephemeris data, which includes the assigned serial number of the satellite; the status of the satellite (healthy or faulty); the current date and time. The second type is almanac data and includes precise orbital position of every satellite in the system.

At the initialize stage, di-GPS® Pro L needs all these data for the position fixed. It usually takes a minute to few minutes to receive all data. An open sky outdoor environment will enable faster acquisition process. It will take a longer time at a weak signal environment. Once di-GPS® Pro L locked to the satellites, it will only take a few seconds for reacquisition even at weak signal environment.

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Note

- di-GPS® Pro L cannot be turned on when the camera are not connected.
- Please refer to user manual of your DSLR for more information on taking photographs with a GPS.
- Be sure to turn off your camera before disconnecting the di-GPS® Pro L. Do not connect or disconnect di-GPS® Pro L while the camera is on. Failure to observe this precaution could cause a malfunction of the camera.
- Do not carry the camera by di-GPS® Pro L or subject the camera or cord to physical shocks while the cord is connected. Failure to observe this precaution could result in physical damage of the cord.
- Re-place the caps on the camera when the terminals are not in use.

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Connect *di-GPS® Pro L* to PC

di-GPS® Pro L can be connected to any PC with USB port. A 10-pin connector to USB cable is supplied for PC connection.

di-GPS® Pro L supports Windows and Mac OSX. The Virtual COM Port Drivers for different OS can be downloaded at di-GPS® support page http://www.di-gps.com/di-gps/support.htm

1. Disconnect the di-GPS® Pro L from the camera.
2. Remove the Cap from the 10 pin remote terminal on di-GPS® Pro L body.
3. Store the Cap in a safe place.
4. Connect di-GPS® Pro L with the supplied 10-pin connector to USB cable. Do not use any extension cord. The 10-pin connector must be aligned with the mark on di-GPS® Pro L body. Tighten the locking nut on the 10 pin connector.
5. Connect USB cable to USB port of PC.
6. If di-GPS® Pro L is properly connected, the Green LED will start to flash, indicating the GPS receiver is searching for a signal. The Green LED will stay on once signal has been established and the receiver is ready to supply the current position.

di-GPS® Pro L will automatically detect the connection of the USB port. The power switch will be disabled when connected to PC. The power switch only functions when connected to DSLR camera.

di-GPS®-Link Software is used for the data logger configuration. Please refer to Glink user guide for log configuration and data download. di-GPS®-Link software and user guide can be downloaded at http://www.di-gps.com/di-gps/support.htm.

Note

Do not connect USB cable to PC and 10-pin cable to camera at the same time.

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Power Mode Switch

Power Mode	Description
On	di-GPS® continuously to search/locked to the satellites. It sends current GPS location to the camera when locked to satellites. If no fix available, it sends the last GPS location in the data logger's memory to the camera until the new fixed available.
Auto	***When metering system active:*** di-GPS® turns on automatically and start to searching satellites. It immediately sends the last fixed in the data logger to camera. It sends the current GPS location to camera once new fixed available. ***When metering system inactive:*** di-GPS® turn off automatically.
Off	di-GPS® in off states. The remote control socket still works when the unit is off.

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Status LED indicator for *di-GPS® Pro L* fix or not fix

When the camera establishes communication with di-GPS®, a GPS icon will be displayed in the LCD panel of the camera.

Status LED	GPS icon	Description
Flashing	Flashing Icon	**No fixed, Signal searching** Data logger memory empty. No GPS data will be recorded in the photos
Flashing	Icon Steady	**No fixed, Signal searching** di-GPS® continuous sends the last fixed in the data logger's memory to the camera until new fixed available. The last fixed GPS location will be recorded to photos.
Steady On	Icon Steady	**Fixed available** di-GPS® continuously sending the current GPS location to the camera.
Flash once	N/A	Flash once when data is logging to memory.
Steady On	N/A	Memory is full.

The LED on di-GPS® Pro L only represents the status of di-GPS® Pro L, not the reception of GPS data by the DSLR camera.

GPS data are only recorded when the GPS icon is displayed in the top LCD panel of the DSLR camera. Please make sure that the GPS icon is displayed before shooting.

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Last Fix Repeat (“LFR”)

di-GPS® Pro L continuously reports the last fix when the GPS signal is lost or the unit is out of the GPS coverage. With this new function, di-GPS® Pro L is able to provide the last fixed GPS data with current UTC date/time to the DSLR camera even if there is no GPS signal, for example inside buildings.

During initialization, di-GPS® Pro L needs to obtain a first fix before the LFR works properly. Once the GPS unit has a good position fix, the GPS will continuously report the last fix with current UTC date/time if the GPS signal is lost or the unit is out of GPS coverage. Once the new fix available, the GPS unit will immediately report the updated GPS position to the camera.

After a power reset (power off….on), di-GPS® Pro L reads the last GPS position in internal memory. If there is no GPS data in the internal memory or the internal clock is out of battery, di-GPS® Pro L will report no fix available. The camera’s GPS icon will flash and no GPS data will be recorded. The GPS unit will report the last recorded GPS data in the internal memory with current UTC date/time after power reset. The internal Real Time Clock (RTC) is powered by the built-in super capacitor. The operation time of built-in super capacitor is about 4 hours at room temperature after the GPS unit turned off. Exhaustion of power of super capacitor may cause incorrect RTC. Turn on the GPS unit and the super capacitor will be charged in a few minutes. The last good fix will be recorded in each photo until a new fix available.

Some models of the DSLR camera (Nikon D7000, D700, D3, D3S & D3X….) support the function “Use GPS to set camera clock”. To prevent the incorrect time set, disable the “Use GPS to set camera clock” function under the GPS menu or turn on the GPS unit and wait for new fix before turn on the camera.

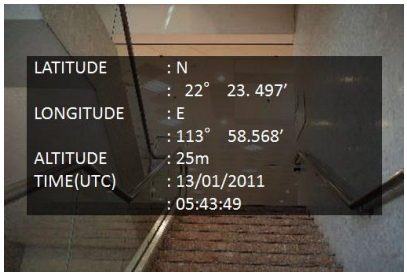

Photo A

Photo B

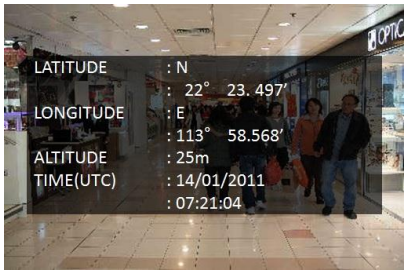

Photo C

Photos A, B, C were shot in three different indoor locations with no satellites in view. Last position in the memory repeated with a CURRENT UTC time.

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Remote Control Socket

Nikon remote control accessories (MC-30 ,MC-36) can be connected to the 10 pin remote control socket of di-GPS® Pro L for remote shutter release. Remove the 10 pin socket cover before using the Nikon remote control accessories. The remote control socket still works when the unit is off.

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Specifications

General
Chipset SiRF Star III Low Power
Frequency L1, 1575.42 MHz
C/A code 1.023 MHz chip rate
Channels 20 channel all-in-view tracking
Sensitivity -159 dBm

Accuracy (Open Sky)
Position 10 meters, 2D RMS
5 meters, 2D RMS, WAAS enabled
Velocity 0.1 m/s
Time 1us synchronized to GPS time

Datum
WGS-84

Acquisition Time (Open sky, stationary requirements)
Reacquisition 0.1 sec., average
Hot start 1 sec., average
Warm start 38 sec., average
Cold start 42 sec., average

Dynamic Conditions
8MB flash memory for up to 260,096 data points
Able to record data in a circular or FIFO format
Time trigger (1s - 65536s) or Distance trigger (1m - 65536m)
Data can be password protected

Data Logger
Altitude 18,000 meters (60,000 feet) max

Power Source
Powered from DSLR camera via 10 pin connector cable
Power consumption less than 36mA

Protocol
Baud rate 4,800 bps
Output message NMEA 0183

Interface
Nikon10 pin connector direct connect to Nikon DSLR cameras.

Physical Characteristics
Dimension 50mm*32mm*13mm
Weight: 50g
Operating Temperature -10°C to +45°C
Operating Humidity: 5% to 90%, No Condensing

* Specifications are subject to change without any notice.

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Warranty

- Dawn Technology Limited guarantees its product, which is determined to be defective or faulty materials and workmanship, for a period of one year after the date of purchase. During the one-year warranty, Dawn Technology will repair or replace the product free of charges. Please keep your original invoice as proof of purchase.
- Customers who have products covered under the warranty are required to contact Dawn Technology Limited by e-mail for troubleshooting issues before returning product.
- Customer should responsible for shipping and insurance charges for returning the product to Dawn Technology Limited.
- Charges will be imposed for repair product, which is out of warranty coverage or invalid warranty.
- The guarantee is not valid if defect is due to damage caused by incorrect use, poor maintenance or if alterations or repairs have been carried out by persons not authorized by Dawn Technology Limited.
- For the device to be used correctly, the user should strictly adhere to all instructions included in the user guide and should abstain from any actions or uses that are described as undesired or which are warned against in the user guide.

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